

Meeting of Predictive Model Working Group

February 14, 2006

California Air Resources Board

Agenda

- Introductions and Opening Comments
- Discussion Topics
 - Current Model
 - New Data Sets
 - Permeation
 - Carbon Monoxide
 - Statistical Techniques
 - Emissions Inventory
 - Other Topics
- Presentation by Others
- Open Discussion
- Closing Remarks

Current Predictive Model

- Developed in 1999 in response to Governor's Executive Order for the phase-out of MTBE.
- Models for THC, NOx, and Potency Weighted-Toxics
- Three Technology Groups
- Adjustments for Permeation and CO
- Uses Mixed-Model approach to estimate regression coefficients
- Weighted by EMFAC emission proportions

New Data Sets

- Toyota Data – Effects of Ethanol on Emissions of Gasoline LDVs
- AAM/AIAM/Oil Industry Low Sulfur and Oxygenate Test Program
- CRC E-67 Evaporative and Exhaust Emissions from Ethanol/Gasoline Blend Fueled Vehicles

Permeation

- Permeation is when compounds in motor vehicle fuel migrate through soft fuel-system components.
- CRC E-65 demonstrated that ethanol increases permeation emission by about 65%
- Mobile Source Emissions Inventory group is estimating the statewide increase in emissions.
- Expect estimates of increase in evaporative emissions
- Second stage of E-65 underway, expected testing to finish by end of year. E20???

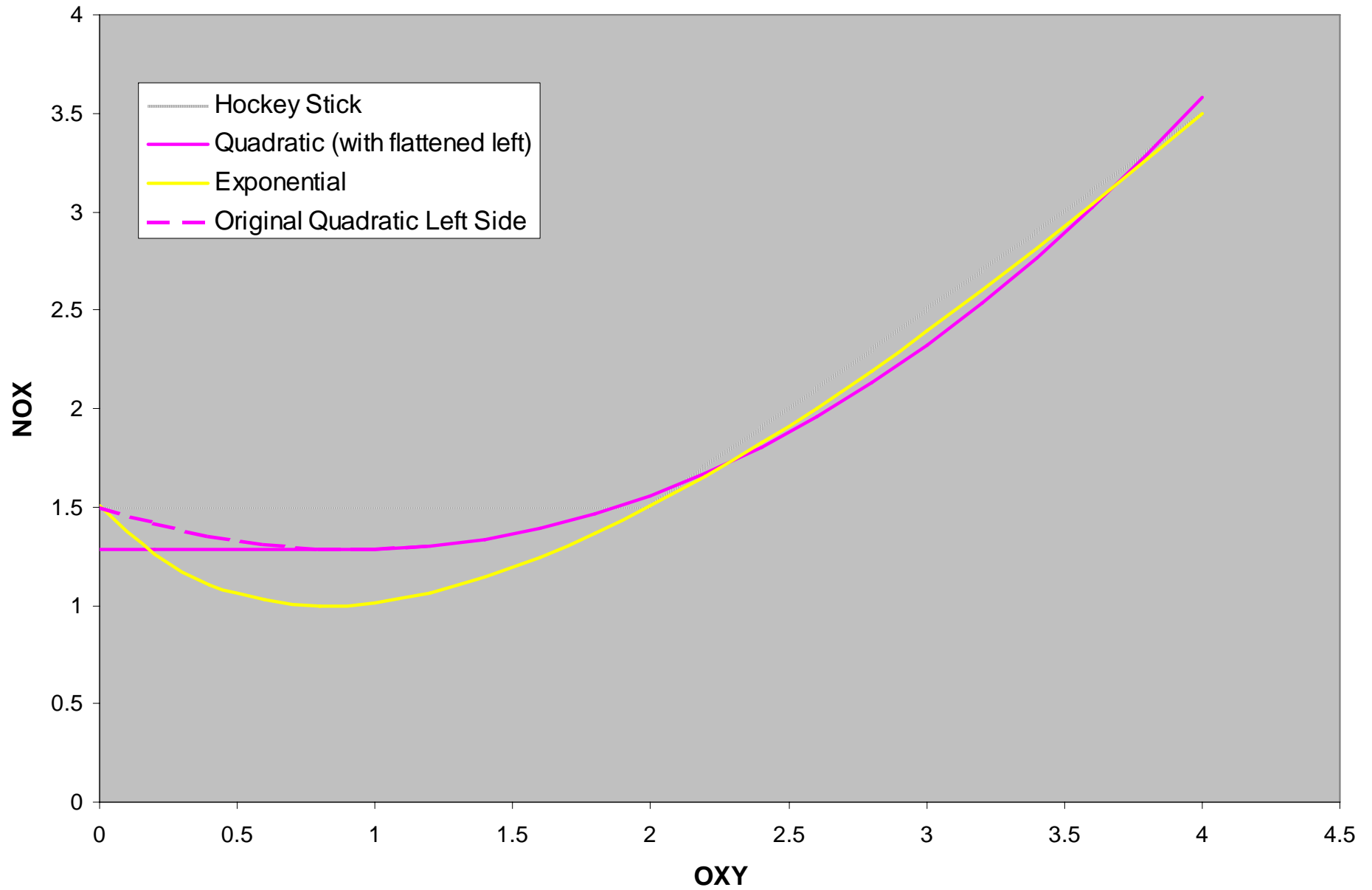
Carbon Monoxide

- VOC Permeation/CO Modeling Final Draft Report Released (February 2006)
 - Draft Staff Report: "[The Ozone Impact of Permeation VOC Relative to Carbon Monoxide](#)"
- Website
<http://www.arb.ca.gov/research/reactivity/reactivity.htm>
- Comments to Dr. Dongmin Luo by March 3

Statistical Techniques

- Term Inclusion
- Log functions –vs- quadratics
- Prediction errors
- Non-linear modeling
- New Tech Groupings – Tech 6 and Tech 2

Three Data Fits



Emissions Inventory

- The updates are necessary to support the development of the 2007 and 2008 State Implementation Plans (SIPs) for the federal ozone and particulate matter standards.
 - Permeation
 - Commingling
 - Vehicle count
 - Fuels composition
- Emissions Inventory Website
<http://www.arb.ca.gov/msei/msei.htm>
- Temperature Update?

Hydrocarbon Model

- Four Parts
 - Exhaust HC% * IWF * RF +
 - Evap HC% * IWF * RF +
 - CO% * IWF * RF +
 - Permeation% * IWF * RF
- Very Complicated
- CO Model?
- Permeation?

Presentations by Others

Open Discussion

Closing Remarks